

# THE MOSSES OF THE CHANNEL ISLANDS, CALIFORNIA

JAMES A. MCCLEARY

Department of Biological Sciences, Northern Illinois University,  
DeKalb 60115

Off the coast of Southern California is a group of eight islands, the Channel Islands, or the Southern Californian Islands. These along with eight others off the coast of Baja California (Baja California Islands), make up the California Islands (Philbrick, 1967).

The Santa Barbara Botanic Gardens has had a continuing program of study of the flora of these islands for some time. A listing of vascular plants of Santa Barbara Island will soon appear in this journal (Philbrick, in press). Numerous trips have been made to these islands by various staff members. E. R. Blakley collected bryophytes and sent them to the author for identification.

Bryophyte collections from the Channel Islands are not plentiful. Sayre (1940) listed the reports given prior to that date naming 39 species. According to her, all islands were represented except Anacapa and Santa Rosa. However, her list did not include Santa Barbara Island. Steere (1954) reported 47 species of mosses which he found on Santa Catalina Island during a foray of the California Botanical Society, thereby doubling the previously known number.

Now that additional collecting has been carried out on each of these islands it seems appropriate to bring the information on these taxa up to date. Eleven new records are reported. Voucher specimens of these have been deposited at SBBG and DEK.

## LIST OF NEWLY RECORDED SPECIES

*Brachythecium albicans* (Hedw.) B. S. G. Dirt bank, north slope, elevation 100 ft.

Cherry Canyon at junction with Windmill Canyon, Santa Rosa Island.

*Claopodium whippleanum* (Sull.) Ren. & Card. var. *leuconeuron* (Sull. & Lesq.)

Grout, Santa Catalina and Santa Cruz Islands.

*Didymodon mexicanus* Besch. var. *subulatus* Ther. & Bartr. ex Bartr. Halfway between the mouth of Willow Canyon and Cardwell Point at Triangulation Point, San Miguel Island. Elevation 125 ft.

Rocky north slope; scattered. Elevation 350 ft. Head of Middle Canyon, Santa Barbara Island. Scil bank on north slope with grass. Elevation 100 ft. Rocky cliff on canyon side, halfway between Eel Point and Seal Cave. San Clemente Island, Los Angeles Co.

*Eurynchium praelongum* (Hedw.) B. S. G. var. *stokesii* (Turn.) Habk. From trunk of *Quercus tomentella*. Elevation 1500 ft. Air Force Radar Station. Santa Rosa Island.

Shady rock under *Quercus*. Elevation 400 ft. Hill east of Coches Prietas anchorage. Santa Cruz Island.

*Gimmia apocarpa* Hedw. var. *atrofusca* (Schimp.) Husn. On wood, north slope. Trunk of Island Oak, *Quercus tomentella*. Air Force Radar Station. Santa Rosa Island.

*Gimmia involuocrata* Card. Scattered on silt deposits over rocks. Elevation 400 ft. First large canyon west of Profile Point. Santa Cruz Island. Santa Barbara Co., California.

*Grimmia ovalis* (Hedw.) Lindb. On rock in shade of Island Ironwood trees. Elevation 400 ft. Hill on west side of Coches Prietas Canyon. Santa Cruz Island. Santa Barbara Co.

*Orthotricum tenellum* Bruch ex Brid. var. *coulteri* (Mitt.) Grout Bark of *Quercus agrifolia*. Elevation 150 ft. Cherry Canyon, Santa Rosa Island.

Branch of *Quercus agrifolia*. Elevation 500 ft. Canyon south of Santon Ranch headquarters, Santa Barbara Island.

On bark of *Quercus agrifolia* in shade. Elevation 400 ft. Hill on west side of Coches Prietas Canyon, Santa Cruz Island. (Identified by S. Flowers as *O. cylindrocarpum* Lesq.)

*Scleropodium apocladum* (Mitt.) Grout Shady rock under *Quercus* and *Heteromeles*. Elevation 700 ft. Oak Grove Canyon on north side of highest peak. Anacapa Island, Ventura Co.

Rocky beach cliff under *Eucalyptus* trees. Elevation 20 ft. 100 yards west of Prisoner's Harbor. Santa Cruz Island.

On rock in shade. Torrey Pine grove at Beeches Bay. Santa Rosa Island. (Identified by Harold Robinson.)

*Tortula obtusissima* (C. Mull.) Mitt. Shady rock under *Quercus*. Elevation 400 ft. Hill east of Coches Prietas anchorage. Santa Cruz Island.

*Tortula princeps* De Not. Common on the bark of *Quercus*. Elevation 800 ft. One fourth mile below the lower reservoir in Bullrush Canyon. Santa Catalina Island.

Bark of *Quercus agrifolia*. Elevation 150 ft. Cherry Canyon, Santa Rosa Island.

#### COMPARISON OF AREA WITH NUMBER OF SPECIES OF PLANTS

An interesting comparison between the area of each island and the number of vascular plants (Raven, 1967) and moss species can be made.

	Area in Sq. Miles	Vascular Plant Species	Moss Species
Santa Cruz	96	420	20
Santa Rosa	84	340	18
Santa Catalina	75	375	59
San Clemente	56	233	12
San Nicolas	22	120	7
San Miguel	14	190	6
Anacapa	1.1	70	6
Santa Barbara	1.0	40	5

Raven makes the suggestion that "all of the islands, with the possible exception of San Nicolas, are approximately 'saturated' with species of vascular plants in the sense of MacArthur and Wilson." If one assumes that the same relationship holds for bryophytes (and there is no evidence one way or another for this), and extrapolating from these figures, additional numbers of species can be expected on all islands except Anacapa. It is also evident that 60 is over twice the number one would expect on Santa Catalina. On the other hand, if the 60 mosses on Santa Catalina can be said to "saturate" that island in the same manner as the vascular plants, then more species can be expected to be found on all other islands. It is doubtful that this condition exists since topography and microclimate play a greater role in the distribution of mosses due to their smaller size and their ability to exist in small crevices, etc. Goats have grazed these islands for many years. It is likely that they have exterminated many species of both vascular and non-vascular

plants. The accessibility of Santa Catalina by both ship and plane means that more collecting can be easily carried out there. Since other islands are either privately owned or have military installations on them, collecting will continue to be limited.

Table 1 gives the complete list of 76 species and their distribution among the islands according to all reports. Nomenclature has been adjusted to conform to Crum, Steere, and Anderson (1965). Abbreviations for these islands are as follows: Anacapa, A; San Clemente, SCl; San Miguel, SMi; San Nicolas, SN; Santa Barbara, SBa; Santa Catalina, SCa; Santa Cruz, SCr; and Santa Rosa, SR.

TABLE 1. MOSSES RECORDED FROM THE CHANNEL ISLANDS AS DERIVED FROM ALL KNOWN SOURCES

	SMi	SR	SCr	A	SBa	SN	SCa	SCl
<i>Aloina aloides</i> var. <i>ambigua</i>							X	
<i>A. pilifera</i>							X	
<i>Alsia californica</i>		X	X				X	
<i>Anacolia menziesii</i> var. <i>baueri</i>							X	X
<i>Anoetangium obtusifolium</i>							X	
<i>Antitrichia californica</i>							X	
<i>Barbula brachyphylla</i>	X	X				X	X	
<i>B. convoluta</i>							X	
<i>B. cylindrica</i>							X	
<i>B. vinealis</i>	X	X	X	X	X	X	X	X
<i>Bartramia stricta</i>		X	X	X			X	X
<i>Bestia brevipes</i>							X	
<i>Bestia vancouverensis</i>			X	X				
<i>Brachythecium albicans</i>		X						
<i>Bryoerythrophyllum recurvirostrum</i>		X						
<i>Bryum argenteum</i> var. <i>lanatum</i>							X	
<i>B. bicolor</i>							X	
<i>B. canariense</i>							X	
<i>B. capillare</i>							X	
<i>B. creberrimum</i>							X	
<i>Ceratodon purpureus</i>	X					X	X	X
<i>Claopodium whippleanum</i>							X	
<i>C. whippleanum</i> var. <i>leuconeuron</i>			X				X	
<i>Crossidium desertorum</i>						X		
<i>Desmatodon convolutus</i>		X					X	
<i>D. guepinii</i>							X	
<i>D. hendersonii</i>							X	
<i>Dicranella varia</i>							X	
<i>Didymodon mexicanus</i> var. <i>subulatus</i>	X				X			X
<i>D. tophaceus</i>						X	X	
<i>Encalyta vulgaris</i> var. <i>mutica</i>							X	
<i>Entosthodon bolanderi</i>		X						X
<i>Eucladium verticillatum</i>			X			X	X	
<i>E. praelongum</i> var. <i>stokesii</i>		X	X					
<i>Eurynchium pulchellum</i>		X					X	
<i>Fissidens limbatus</i>							X	
<i>Funaria hygrometrica</i>							X	

TABLE 1. *Continued.*

	SMi	SR	SCr	A	SBa	SN	SCa	SCI
<i>F. muehlenbergii</i>							X	
<i>Grimmia apocarpa</i> var. <i>atrofusca</i>		X						
<i>G. decipiens</i>								X
<i>G. involucrata</i>			X					
<i>G. laevigata</i>								X
<i>G. ovalis</i>			X					
<i>G. pulvinata</i>							X	
<i>G. trichophylla</i>							X	
<i>Haplocladium microphyllum</i>							X	
<i>Homalothecium aeneum</i>							X	
<i>H. arenarium</i>			X	X	X		X	X
<i>H. nuttallii</i>							X	
<i>H. pinnatifidum</i>							X	
<i>Isothecium cristatum</i>							X	
<i>Orthotrichum lyellii</i>		X	X				X	
<i>O. speciosum</i>								X
<i>O. tenellum</i>		X	X				X	
<i>O. tenellum</i> var. <i>coulteri</i>		X	X		X			
<i>Phascum hyalinotrichum</i>							X	
<i>Pottia arizonica</i>							X	
<i>P. bryoides</i>							X	
<i>Pterogonium gracile</i>			X				X	
<i>Rhynchostegiella compacta</i>							X	
<i>Scleropodium apocladum</i>		X	X	X				
<i>S. californicum</i>	X	X	X	X		X	X	X
<i>S. cespitans</i>							X	
<i>S. tourettei</i>							X	
<i>Timmiella anomala</i>							X	
<i>Tortula bolanderi</i>							X	
<i>T. brevipes</i>	X	X					X	
<i>T. californica</i>							X	
<i>T. intermedia</i>			X				X	
<i>T. laevipila</i>			X				X	
<i>T. obtusissima</i>			X					
<i>T. princeps</i>		X					X	
<i>T. ruralis</i>			X		X			X
<i>Trichostomopsis brevifolia</i>							X	
<i>T. fayae</i>							X	
<i>Weissia controversa</i>							X	
Totals	6	18	20	6	5	7	59	12

## LITERATURE CITED

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